With the author's best respects

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ON THE INFLUENCE OF THE AGE OF PARENTS

ON THE VITALITY OF THEIR CHILDREN.

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The aim of the present demological essay is, to investigate whether the age of parents is of any influence upon the vitality of children and in the affirmative case, to find the statistical measure of this influence. The basis of this investigations is furnished by the data upon the age of parents. who have lost children below the age of ten, which data since many years I have caused to be noted at Budapest. The results I shall have the honomour to submit are drawn from the observations on the cause of death of 29.813 children.

With regard to the tendency of the proposed investigations, whe may group the cause of death of children in two classes: 1-o such as where the germ of disease has already been acquired in the womb, and secondly where the death has been produced by a cause acquired only during the course of life. We may design the former as the uterine and the latter as the extrauterine causes of death. I have classed into the uterine group all cases of weak constitution. viz: the inborn debility, the atrophia and inanitio, also the prematurely born children deceased shortly after their birth, who, so to say, represent only a special kind of inborn debility. Besides these cases of weak constitution, attention has been paid also to the deaths caused by tuberculosis of lungs, hydrocephalus, rachitis and scrophulosis.

These observations were made for the first time during the five yeas of 1878—1882 and were resumed again in 1888—1889. Inborn debility, hydrocephalus, rachitis and scrophulosis have been made the subject of observation during the said seven years, whilst the other causes of death were added only during the past two years.[1]

From the results obtained, we could in truth not conclude, how many children issued from parents of different age have died from the different causes mentioned above, but me may well infer, how the frequency of these causes is changing with the progressive age of parents — and to know this in fact the real aim of our investigation.

We shall investigate in the following, fers the influence of the maternal, then that of the paternal age and finally, which changes have been produced by the combined age of both parents. To be sure whether the parental age exercises indeed a special influence on the appearance of uterine causes of deaths, I have also submitted to observation the most important of the extrauterine order, that is the diarrhoea; we shall regard, if it follows a different way.

To avoid heavy and tedious circumscriptions, it may be allowed to agree in the following terms: children issued from parents of the same age, may be shortly named equiparental, children whose fathers are of the same age equipaternal and where the mothers are of the same age equimaternal; children issued from older fathers or mothers as fatherelder or motherelder and vice versa shall we also speak from fatheryounger and motheryounger children.

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[1] In fact consumption was also already observed in the first period. But in consequence of the ambiguity of terms then used — the Hungarian term for consumption being like the English doubtful, whether it means consumption in general = atrophia, or lung consumption = tubercolosis pulmonum — I prefered to renounce entirely upon the observations of this period. But beginning from the year 1888 a strict distinction was introduced between inanitio — atrophia infantum and lung tuberculosis.

I. Influence of the maternal age.

The deaths caused by weak constitution have been observed during two years, but inborn debility also for seven years. The further seven years observations extend over the remaining uterine causes (viz. hydrocephalus, rachitis and scrophulosis).

These observations reveal the most important fact, that among the youngest mothers (under 20 years of age) the weak constituted children are more frequent: this frequency is not only noticed in inborn debility, but — remarkable to see — in each of the mentioned causes.

To furnish before all a general view of the facts, we let fellow a general recapitulation:

1⁰ of the two years observations, relating to weak constitution and

2⁰ of seven years observations relating to the other uterine causes, to which we add a third column, showing the influence of maternal age upon the most important of the extrauterine causes, viz. the diarrhoea. It is clear that if the parental age exercises influence upon the constitution and the resisting power of the children, this influence ought to be also remarked in the extrauterine causes (inasmuch as these are not caused by violence) and so also in that of diarrhoea. Thus we could not expect, that the frequency of this cause should be found without any connection wilth parental age; but the fact of a greater dependency of intra-uterine causes will furnish a valuable affirmation concerning the supposed causality betwen the age of the generators and the uterine causes of death of the generated. Now the mortality of equimaternal children is the following:

Amongst hundred deceased children the cause of death was

Age of the mother		Weak disposition	Other uterine causes	Whilst diarrhoea
—20	years	35.20%	22.31%	26.29%
20—30	»	21·65%	14·31%	21·89%
38—35	»	14·04%	12·85%	18·05%
above 35	»	15·35%	13·45%	19·25%

To illustrate in a clearer way which changes of mortality are caused by the change of maternal age, let us put the mortality from 20 to 30 years = 100. In this case we get the following table:

—20	years	163	156	120
20—30	»	**100**	**100**	**100**
30—35	»	65	90	82
above 35	»	71	94	88

As the limit of the age of 20 was chosen only for the sake of the round number, it is of interest to investigate, how the figures are shaping themselves in each year embraced at a first class of age. It is a pity that even in the course of seven years observations so little material could be gathered respecting the youngest mothers, that it would not be advisable to calculate the percentage of cases of weak constitution;[2] it was only for inborn debility that I got sufficient material. On the basis of these observations we could pretend that the younger the mother, the weaker her child, that is to say, that the more frequent the case, that the children are coming into the world in a very weak state. The following is the percentage of deaths caused by inborn debility, opposed to those by diarrhoea;

Age of the mother:	Inborn **Debility**	Whilest of **Diarrhoea**
18—19 years	28.12%	23.43%
19—20 »	20.93	27.91%
20—30	14.31%	21.89%

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[2] As at the observation of merely relative numbers, the quantity of facts from which they are derived is not known, we are always exposed to the danger of attributing to great importance to relative numbers which may proceed from too scarce observations. At every step we meet statistical calculations reckoned out even to the hundredth parts of percents, but which spring out only from a handful of observations. In the field of medical statistics we meet such calculations especially in records. indicating the frequency of lethal course of diseases, and that on the one hand for scarce diseases and on the other for frequent ones, but where the lethal end occurs very seldom. So Mr. Reitz — in his »Kritik der Schutzpockenimpfung« has reckoned out, thal at the Berlin smallpox lazareth, there died from 100 unvaccinated persons fourteen whole and still 28 hundreth of percent; but looking at the absolute figures we find that the whole number of these patients were only seven! It is still very doubtful, out of thousand patients there had also died 14.28 percent; but it is sure that, if by chance one person more had died, the the lethality would have increased to 14 whole and 56 hundreths of percent! They, howewer, often calculate percents of still smaller observations; so Reitz himself quotes blaming the example of an hospital, where the lethality of small pox was calculated to be of 33¹/₃%, owing to the fact that there died one out of three patients! To avoid such misunderstandings, the author, since a couple of decennia, uses certain signs on the side of such unvaluable percentages. Taking

Passing to the specification of the introduced classes of diseases into the single causes of deaths, comparing the

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as starting point that there where per mille calculations are quoted, we have the impression as if there had been taken thousands or at least one thousand of observations it seemed to me that also percents should be only reckoned there, where at least hundred cases had been observed; consequenthy I put into parenthesis all calculations derived from less than hundred observations, in order to call thus attention to the small weight of these figures; but where the number of cases was only fifty or less, I left out entirely the calculations of percents, putting instead of it an asterisc. Thus we put a parenthesis, if for instance out of hundred children issued from mothers of seventeen years age, 25 percent died from diarrhoea, but the totality of these children included only 56 persons.

Or there are also such cases, where this first totality is numerous enough, but where the appearances to be observed upon them (let us name these the second totalities) are very scarce. Where we are occupied with physical or chemical investigations, where consequently we have to deal with natural forces, there the quantity of the one or the other totality has no inportance; if a mineral water contains even but a 10.000 th. part more of arsenic than an other one, it will doubtless produce quite different therapeutic effects. Such is not the case in demography and sociology, where — already in consequence of the complexity of causes, the manner of measuring is different and coarser. We are in these cases obliged to leave latitude for the effect of these other causes which — inasmuch as they are unkown to us — we like to design with a the collective name of »hazard«.

To eliminate the effcet of »hazard«, statistics must furnish the greatest possible number of observations. But we saw that the great number of observations of the first totality is not yet sufficient. So for instance, we find in our tables 1314 chidren, issued from mothers older than 40 years; that is, no doubt pretty numerous; but if among these there are only 4 children who died from premature birth and if in another class of age, there had by chance occurred one more death, this would produce in the relative number a difference of $25^0/_0$, what would seem to be very important, but is in fact only an insignificant play of hazard. To secure the judgment of the reader against those gross mistakes, I used in the present paper the asteriscs instead of percentages also in all such cases where, for the second totality, I disposed only of 5 or still less observations, whilest in cases where I had only from 6 to 10 observations, the percentage was in fact calculated, but put also into two parenthesis.

children of the youngest mothers with those of the eldest ones (above 35 years), we find that the formers are exposed

to diarrhoea about 50% oftener.

but to rachitis 75% more frequenthy,

to consumption and hydrocephalus 100% more (that is twice so often),

to atrophia 200% more (that is thrice so often).

Here the respective datas:

a) two years observations.

Age of the mother	Consumption	Atrophia	Premature birth	Inborn debility
—20 years	8·45 %	9·15 %	*	17·60 %
20—30 »	5·23	5·15	0·59 %	10·68
30—35 »	2·78	4·24	0·49	5·53
above »	4·26	3·06	0·51	7·52

b) seven years observations.

	Inborn debility	Hydrocephalus	Rechitis	Scrophulosis
—20 years	17·53 %	2·59 %	(1·39) %	*
20—30 »	11·29	1·31	0·94	0·77 %
30—35 »	9·85	1·53	0·60	0·87
above 35 »	10·81	1·28	0·80	0·56

There remains still to enter into the specification of the oldest classes of age. We arrive thus to the conclusion, that until about the fourtieth year, the above named uterine causes of death appear scarcer. As even at this farthest limit of female engendering power, also diarrhoea does not appear oftener, but rather seldomer: we could not infer any disfavourable influence in respect of late breeding mothers, if we had not to remark that two causes of death, that is rachitis and still more the very important consumption, would not betray at the end of the breeding period (about 38 years) some increase of their frequency.

Two years observations.

Age of mother		Consumption	Atrophia	Inborn debility
35—37 years		2.84%	2.57%	6.09%
37—39	»	2.71	3.88	6.98
39—41	»	5.82	3.29	12.15
41—43	»	13.18	*	6.59
43—45	»	*	*	(7.31)
above 45	»	—	*	*

Seven years observations.

		Inborn debility	Hydrocephalus	Rachitis	Scrophulosis	Diarrhoea
35—37 years		10.39%	1.59%	0.66%	0.66%	19.43%
37—39	»	11.09	1.08	(0.51)	(0.57)	20.07
39—41	»	12.78	1.29	1.29	0.46	18.78
41—43	»	9.89	(1.39)	1.39		19.32
43—45	»	8.30	*	*		16.61
abore 45	»	8.15	—	*		16.67

II. Influence of the paternal age. [3]

It is to be seen beforehand that the influence of paternal age on the vitality of children wil not be so important like that of the mother. whose constitution. besides the impulsion given in the act of generation. exercises so great an influence upon the physical developement of the child. being for months the sole source of its nourishment.

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[3] I have to remark that the working out of the five years paternal observations occured at a later time and was carried out by another staff than refering to maternal age. This explains also the small divergences in the two tables, so for instance that the table of fathers embraces 29.819 cases, whilst that of mothers 29.813; further that the inborn debility embraces here 3.220, there 3252, the hydrocephalus here 416, there 413 cases etc. At great elaborations, as in statistics, such divergences are, as it is well known, inevitable; the smallness of them is the best proof for the exactitude of the elaboration.

It seems tkat the most vigorous children are issued from fathers of 30 to 40 years of age,[4]) the children of younger and older fathers dying somewhat oftener throough uterine causes.

It is, however, very striking, that in the oldest age. that is respecting fathers of about 60 years or more. the vitality of children seems to increase anew. For this unexpected turning we cannot find any satisfactory explanation. Perhaps that exceptional circumstances, occurring here and there in cases where the husband is a good deal older, exercise some influence on the statistical average; but on our part we should be the most satisfied. if these results were to be refuted by further observations.

We give also here first a general view of the two classes of uterine causes, opposing here likewise the diarrhoea as extrauterine cause.

Among hundred deceased children the cause of death was:

Age of father	Weak Constitution (2 years observations)	Other uterine causes (seven years observations)	Whilst Diarrhoea (seven years observations)
—25 years	20.41%	14.57%	19.31%
25—30 »	18.17	14.13	22.02
30—40 »	17.05	12.92	20.03
40—50 »	21.46	16.04	21.10
above 50 »	10.14	11.96	18.19

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[4]) More correctly spoken: emongst children of this paternal age, weak constitution causes least frequently death; I hope one will admit this conversion, used far the sake of concise expression and being moreover in harmony with the nature of matter.

We got so little material with regard to fathers below 25 years of age, that a specification of single years would it split into too small fragments;[5] but it is well possible to specify the oldet class of age. We anrive thus to the following results: (The two years observations furnisbing too small a number, we are obliged to keep ourselves to the one cause of inborn debility to which we oppose the data on diarrhoea).

Age of father		Inborn debility	Diarrhoea
50—55	years	7.57%	19.46%
55—37	»	(11.58)	(13.68)
55—61	»	(14.81)	(17.40)
above 61	»	(12.63)	(18.15)

There remains yet to divide the two groups of causes into the single causes of death, where, however, we shall have to omit the premature birth, in consequence of the scarcity of these cases.

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[5] I intend to continue these observations also in the future, when it will the be possible to enter in a more detailed specification, not only of the age of these youngest fathers, but of all ages in general. Of course, one will have to wait for decades till there will be gathered sufficient material, for example in the case of fathers of 19 or 20 years of age. — Under such circumstances I am the more glad, to being enabled to point out another still richer source of informations belonging tho these problemas, viz, the Census of Budapest of 1891. I have, in fact, introduced at this census the following questions addressed to each inhabitant:

1-o. Name and age of the family head.
2-o. Age of wife.
3-o. How many years married.
4-o. Number of children born alive.
5-o. How many alive out of them at the date of census.
6-o. Religion of head of family.
7-o. Occupation of head of family.

As these questions were addressed to a population of half a million souls and answered simultaneonsly, it will be possible to enter into a very detailed specification of ages. I hope to finish the elaboration of this most valuable inquiry still in the course of the present year.

Age of father		Con-sumption	Atro-phia	Inborn	Debitity	Hydroce-phalus	Rachitis	Scrophu-loses
		2 years observations				seren years observations		
—25	years	5.71	3.30	7.75	11.37	1.43	1.21	*
20—25	»	4.74	3.90	9.27	11.38	1.13	0.88	0.74
30—40	»	3.61	4.49	8.31	10.06	1.45	0.77	0.64
40—50	»	6.01	5.25	9.89	12.68	1.49	0.70	1.17
above 50	»	*	*	5.80	9.16	1.53	(1.02)	*

We see that also seen from the side of the paternal age, the situation of the fatheryoungest children does not appear in a very favourable light. Except the one ~~inborn debility~~ atroph they are not better situated at any cause of death than the children of fathers between 25 and 30 or 30 and 40 years of age; but in a few cases, so for instance in rachitis and consumption, there seems to be remarkable even any tendency of getting worse. In consequence of the scarcity of material it is not yet possible to make any positive statement.

III. Influence of the combined ages of both parents.

The respective investigations can be pursued in two directions: 1⁰ to learn what was the effect of age if — as it is the case in the great plurality of marriages — the father is older than the mother; then if both are nearely of the same age and finally if the mother is older. But besides these investigatigations, whbich follows the difference of age, there are also indicated 2-o such ones which allow to perceive the influence exercised ley the combination of the ages of both parents.

a) Influence of the difference of age.

The age of the parents being elaborated not by single years, but by groups of age, the classification of marriages into motheryounger, equiaged and motherelder ones, can only be approximative.[6])

The following observations show no remarkable effect of these differences of age upon the intrauterine causes. The diarrhoea also betrays in this respect no dependence, being represented by the children of motheryounger marriages with 21·5 percent, by the equiaged with 19.81 percent and by the motherelder ones with 23.53 percent. Relating to uterine causes we get the follorving figures:

a) *week constitution* (*two years observations*)

	Total of 0.—10 years deceased	Out of these died by:				
		Inborn debility	Consumption	Atrophia	Premature birth	Totel
motheryoungermarriages	3105	301	137	149	17	604
equiaged »	5117	415	217	212	30	874
motherelder »	170	14	5	9	—	28
Total	8392	730	359	370	47	1506

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[6]) The classification of the combined ages into the above mentioned three groups happened in the following manner:

We regarded as motheryounger marriages those, where mother below 20 years were married with fathers above 20 years of age; mothers from 20 to 30 with fathers above 30, and mothers from 30 to 35 with fathers above 40;

as equiaged marriages: mothers below 20 with fathers below 20 years of age; mothers from 20 to 30 with fathers from 20 to 30; mothers from 30 to 35 with fathers from 30 to 40 and mothers above 35 with fathers above 40;

as motherelder marriages: mothers from 20 to 30 with fathers under 20; mothers from 30 to 35 with fathers from 20 to 30 and mothers above 35 with fathers from 20 to 30.

b) *other uterine causes (seven years observations.)*

		Inborn debility	Hydro-cephalus	Rachitis	Scrophulosis	Total
motheryounger marriages	12098	1339	183	100	118	1740
equiaged »	17222	1865	219	142	102	2328
motherelder »	493	48	11	4	4	67
Total	29813	3252	413	246	224	4135

We let follow the percentages of each cause of death counted from the total of deceased children:

	Consumption	Atrophia	Premature birth	Inborn debility
	two years observations			
motheryounger marriages	4.41	4.79	0.55	9.70
equiagad »	4.24	4.14	0.59	8.11
motherelder »	*	(5.29)	—	8.24

	Inborn debilitis	Hydro-cephalus	Rachitis	Scrophulosis
	seven years observations			
motheryounger marriages	11.07	1.51	0.82	0.98
equiaged »	11.83	1.27	0.82	0.59
motherelder »	9.74	2.23	*	*

We bave seen that towards the end of the female generative power, the children were scarcely weaker than in the midst of this period; it is to this circumstance that we must attribute the fact, that even in marriages where the wife is older, we may scarcely feel any remarkable difference in the vitality of children. Only in the most extreme cases, there where the father is a good deal older, an unfavourable turn seems to take place. If we look for instance into the cases where the mother is between 20 and 35 but where a the father is over 50, we could in the course of seven years gather only 270 cases of deceased children.

Among these, 13.3 died from inborn debility against 10.83 percent in equiaged marriages and from hydrocephalus 4.1 against 1.27 of equiaged marriages. Thus in these extreme cases we find still an unfavourable influence of the great prominence of the age — perhaps of the absolute old age — of the father. These observations are leading to the last part of our investigation where we shall have to divide the more average idea of younger or older husbands into its very elements, that is info the single combinations of ages.

b) Influence of the combined age of both parents.

If we divide our data into the single combinations of age existing between the consorts, the material will be split into so many fragments that it be comes impossible to make use of the two years observations. We must consequenthy limit ourselves to those four uterine causes which have been observed during seven years, adding however also here the diarrhoea, observed likervise for seven years.

In this respect we will first start from a certain maternal class of age and investigate how the frequency of the single causes changed with the increasing age of fathers; then we shall repeat the same proceeding, starting from a certain age of fathers and enquire how the vitality of children changed with the increasing age of the mothers.

1. Mothers. Refering to mothers under 20 years we only meet two paternal ages (20 to 30 and 30 to 40) and only one cause of death — the inborn debility — where sufficient observations would have got together. It seems that the union of youngest mothers with oldest fathers was

not very favourable, the quota of all mentioned causes rising from 21 percent with younger husbands to 28 with older ones. As the diarrhoea betrays nearly no increase at all for these ages, (that is only from 25½ to 26 percent), we could provisionally suppose that this combination of age is of unfavourable influence especially on the appearance of uterine causes.

Mothers between 20 and 30 show a most favourable effect when united with husbands 10 years older than themselves and a somewhat unfavourable one with younger husbands or with such who are 20 years older, whilst the union with still older husbands (over 50 years) seems to favour the most the appearence of uterine causes of death. The extrauterine diarrhoea aypears at all ages with nearly the same intensity; the proportionally greatest increase is to be found with youngest fathers (20 to 30 years of age) We give here the following numerical results:

Mothers between 20—30 years.

Age of the father	Inborn debility	Hydrocephalus	Rachitis	Scrophulosis	Total	Diarrhoea
20—30 years	12.40	1.07	**1.20**	0.69	15.36	**23.36**
30—40 »	10.48	1.25	0.77	0.74	13.24	21.31
40—50 »	**13.31**	**2.54**	(0.89)	**1.77**	18.51	19.14
above 50 »	(9.09)	(10.10)	(*)	—	**21.21**	19.19

With mothers from 30 to 35 the uterine causes are increasing in such marriages where the fathers are between 40 and 50 or above 50 years of age; it seems further that the marriages with husbands who are 10 to 15 years younger are likewise followed by some evil, especially a more frequent appearance of hydrocephalus. The up and dow bounds which we remark in the cause of diarrhoea, proves how much greater for the intrauterine than for the extrauterine causes is the dependency of paternal age.

Mothers between 30—35 years.

Age of the mother	Inborn debility	Hydrocephalus	Rachitis	Scrophulosis	Total	Whilst Diarrhoea
20—30 years	7.59	**2.88**	*	*	12.30	**23.04**
30—40 »	9.54	1.42	0.51	0.55	12·02	17.33
40—50 »	10.85	1.70	0.85	2.00	15.40	19.03
above 50 »	**15.79**	*	*	*	**17.54**	21.63

Middleaged women, that is above 35, have not to fear any evil when marrying husbands of 30, 40, 50 and even over 50 years of age; but it seems that at this age of females it is not advisable to marry considerably younger husbands.

Mothers above 35 years.

20—30 years	(17.97)	—	(*)	—	**19.10**	(25.84)
30—40 »	9.79	1.75	0.79	0.48	12.81	18.80
40—50 »	11.32	1.10	0.80	0.67	13.89	19.39
above 50 »	10.85	*	*	*	12.68	19.03

b) Fathers. The influence exercised by the changing age of mothers can be known also already by the preceding observations. As we ought only to enumerate the above result in an inversed order we limit ourselves to group the numerical results as follows:

a) fathers from 20—30 years

—20 years	17.42	(2.41)	*	*	21.71	25.51
20—30 »	12.40	1.07	1.20	0.69	15.36	23.36
30—35 »	7.59	2.88	*	*	12.30	23.04
above 35 »	(17.97)	—	*	—	(19.10)	(25.84)

b) fathers 30—40 years

Age of the mother		Inborn debility	Hydro-cephalus	Rachitis	Scrophu-losis	Total	Whilst Diarrhoea
—20	»	20.19	*	*	*	27.88	25.96
20—30	»	10.48	1.25	0.77	0.74	13.24	21.31
30—35	»	9.54	1.42	0.51	0.55	12.02	17.33
above 35	»	9.79	1.75	0.79	0.48	12.81	18.80
		c) fathers 40—50 years					
20—30	»	13.31	2.54	0.89	1.77	18.51	19.14
30—35	»	10.85	1.70	0.85	2.00	15.40	19.03
above 35	»	11.32	1.10	0.80	0.67	13.89	19.39
		d) fathers above 50 years					
20—30	»	(9.09)	(10.10)	*	—	(21.21)	19.19
30—35	»	15.79	(*)	*	*	17.54	21.63
above 35	»	10.85	(*)	*	*	12.68	19.03

The deterioration of chances is especially striking in such marriages where men marriaced women of the youngest age (below 20).

If we are to recapitulate the results of our investigations, it seems possible to assert with some positiveness the thesis that — at least in our country, — girls should not get married before the age of twenty. If this can be maintained for the somewhat warmer climate of Budapest. where the puberty of girls appears already at the age of 13, how much more is this assertion to stand for the later ripening population of northern Europe and so also for that of the United Kingdom. The hint furnished in this respect by demology — supposed that it will be justified also by further and ampler observations [7]) —is a very important one and so less to undervalue as it is in pretty lively contradiction with the general custom. The ideal of each mother — at least in our country — is to get her daughter married at the age of 18 or 19; girls of 20 years of age will not be in general considered as standing still on the threshold of marriable age. There are in Budapest yearly 40 couples where the bride has not yet reached her seventieth year, 50 where she is not yet 18 and 120 where she is not yet 19 years old. The number of brides below 20 years represents 13 per cent of the protogam brides, with the Catholics even 18 %, whilst with Protestants and Calvinists 12 % and with Israelite only 10. Also in England 12 per cent of the brides step to the altar bolow 20 years of age and their yearly number is not less than 23.000!

As to the influence of the combined age of parents, our observations may be considered as a proof of the general rule, that old men ought not to marry young women. But as statistical data to prove this rule were up to now failing, it was perhaps not quite superfluous to produce them. We are thus enabled to assert, guided not only by instinct but by statistical reasoning. that women under 30 years and even between 30 and 35, would do better to avoid marriage with men above 50 years of age. But there are still two other facts resulting by our observations which — if also otherwise approved — would the more deserve some attention, as it is not probable that we could have reached them in a merely instinctive way, viz., that women in the middle age of above 35 years have to fear no unfavourable chances by choosing a husband of above 30 years, and that these same women and even theose between 30 to 35, should do better to avoid union with young men, as it seems probable that their children will be more exposed to hydrocephalus or inborn debility.

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[7]) Rubin-Westergaard in their statistics of marriages in Copenhague, published in 1890, have obtained a similar result. They in fact remark, that this influence of age is a very small one. In respect to that we wish still to point out, that in our investigations we distingnish between intrauterine and extrauterine causes and that the prominent influence is just found in the intrauterine ones, and besides this, that the work of the excellent Danish statisticians is based upon the paternal age, which also in Budapest was not found to be of so important an influence like the maternal age.

The hints resulting for the male half are already included in the foregoing remarks; they should generally renounce to the youngest girls under 20 or 19 years of age; further, if between 20 and 30, they should avoid marrying with women above 35 years of age, and finally, if at the age of above 30, they have approached the end of male generative power, they should select no younger women than above 30, eventually about 35 years of age.